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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,325	10/15/2004	Tsutomu Yoshitake	Q84259	9221

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
LEWIS, BEN	

ART UNIT	PAPER NUMBER
1795	

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10/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,325	YOSHITAKE ET AL.	
	Examiner	Art Unit	
	Ben Lewis	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *33 and 35-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *33 and 35-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/23/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. The Applicant's amendment filed on June 26th, 2009 was received. Claims 1-32 and 34 were cancelled. Claims 33 and 42 were amended. Claim 46 was added.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on December 19th, 2008).

Claim Rejections - 35 USC § 103

3. Claims 33-40 and 42-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (U.S. Patent No. 6,057,051) in view of Johnson (U.S. Patent No. 6,808,833 B2).

With respect to claims 33, 42 and 46, Uchida et al. disclose a miniaturized fuel cell assembly (title).

With respect to a heat-producing section and a heat-dissipating section arranged adjacent to the heat producing section, Uchida et al. teach that the hydrogen storage unit **205** "fuel supply section" is heated by the air discharged from the fuel cell body **204** "power generating section" (Col 8 lines 24-30).

With respect to a fuel supply section Uchida et al. teach that the cell device **2** includes a cell device casing **3** constituting a shell of the cell device **2**. Mounted within

the cell device casing **3** are a fuel cell body **4**, a hydrogen storage unit **5** storing hydrogen to be used in the fuel cell body **4**, hydrogen supply means **6a** (fuel supply piping) for feeding the hydrogen from the hydrogen storage unit **5** (fuel tank) to the fuel cell body (Col 5 lines 54-67).

With respect to a fuel supply section being arranged in the heat-dissipating section Uchinda et al. teach that since the hydrogen supply pipes **6b** are embedded in the water retention means **8** "heat-dissipating section" as described above, the moisture or water in the water retention means **8** penetrates into the hydrogen supply pipes **6b** through peripheral walls thereof, thereby humidifying the hydrogen gas flowing through the interior of these pipes **6b**. The water retention means 8 is held in contact with the fuel cell body **4**, and therefore absorbs heat produced when the fuel cell body **4** generates electricity, thus contributing to evaporation of the retained moisture. Besides, the water retention means **8** "heat-dissipating section" is extended to be held in contact with the hydrogen storage unit **5**, and therefore transfers the heat, produced when the fuel cell body **4** generates electricity, to the hydrogen storage unit **5** to heat a hydrogen storing alloy, thereby enhancing an efficiency of a hydrogen-discharging reaction (Col 6 lines 1-67) (See FIGS. 6 and 7).

With respect to a flow-rate-control section, Uchida et al. teach that the fuel cell device comprises a control unit for controlling a flow of the hydrogen from the hydrogen storage unit to control an operation of a fuel cell in the fuel cell body (Col 3 lines 4-15).

With respect to the fuel-supply section comprises a fuel tank and fuel channel and wherein at east part of the fuel channel is arranged in the heat-dissipating section

Uchinda et al. teach that since the hydrogen supply pipes **6b** are embedded in the water retention means **8** "heat-dissipating section" as described above, the moisture or water in the water retention means **8** penetrates into the hydrogen supply pipes **6b** through peripheral walls thereof, thereby humidifying the hydrogen gas flowing through the interior of these pipes **6b**. The water retention means 8 is held in contact with the fuel cell body **4**, and therefore absorbs heat produced when the fuel cell body **4** generates electricity, thus contributing to evaporation of the retained moisture. Besides, the water retention means **8** "heat-dissipating section" is extended to be held in contact with the hydrogen storage unit **5**, and therefore transfers the heat, produced when the fuel cell body **4** generates electricity, to the hydrogen storage unit **5** to heat a hydrogen storing alloy, thereby enhancing an efficiency of a hydrogen-discharging reaction (Col 6 lines 1-67) (See FIGS. 6 and 7).

Uchida et al. does not specifically teach the fuel being a liquid. However, Johnson discloses a fuel supply for a fuel cell (title) wherein the fuel container **24** is configured to hold a liquid fuel supply, such as a borohydride or methanol solution, and is typically constructed from a material inert to the fuel solution. Fuel supply **20** also includes a fuel outlet **28** configured to pass fuel out of fuel storage area **26** (Col 2 lines 45-60). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the liquid fuel system of Johnson into the fuel cell system of Uchida et al because Johnson teach that these fuels "liquid" are relatively safe and easy to use and to store at room temperature, they may be used in disposable or rechargeable fuel supplies (Col 1 lines 55-64).

Uchida et al. as modified by Johnson are considered analogous art because they are from the similar problem solving area of supplying fuel to a fuel cell powered laptop computer which is common to both Uchida et a. and Johnson.

Furthermore, direct methanol "liquid" and hydrogen "gaseous" based fuel cells are widely known in the art. The use of liquid and gaseous fuels in portable electronic applications are also widely known in the art as shown by the teachings of both Uchida et al. and Johnson et al. which disclose the use of hydrogen and liquid fuel being used in laptop applications respectively. Therefore it would have been obvious at the time the invention was made to incorporate the liquid fuel of Johnson et al in the fuel cell of Uchida et al. because a person of ordinary skill has good reason to pursue the known options within his or her technical grasp, in this case, it is the use of liquid "methanol" as opposed to gaseous "hydrogen" fuel. Ex Parte Smith, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing KSR v. Teleflex, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)).

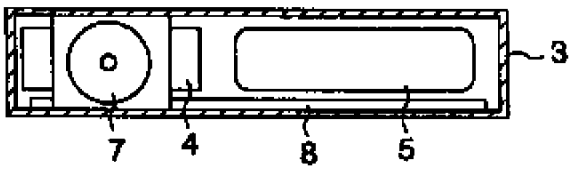
Examiner notes that the rejection is based on the embodiment of an assembled fuel cell system of the prior art where the components are mechanically separated from each other.

With respect to claim 35, Uchinda et al. teach that the hydrogen storage unit **205** is heated by the air discharged from the fuel cell body **204** while there can be used a

construction, in which heat generated from the equipment "heat-producing section", on which the fuel cell power source is mounted, is transferred to the unit by the use of a high thermally-conductive metal such as copper or aluminum or carbon materials in order to achieve similar effects (Col 8 lines 24-45).

With respect to claim 36, the fuel tank and the fuel cell body **4** are stacked above heat-dissipating section **8** in the device casing **3** "which contains the heat producing section" in figure 6.

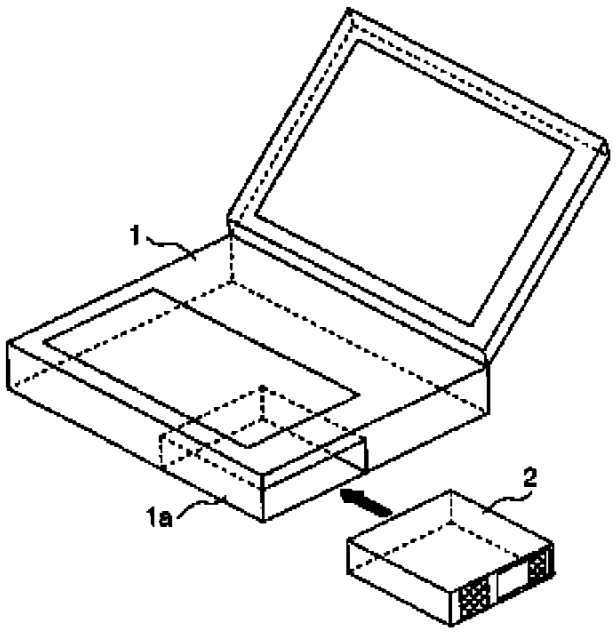
FIG.6



With respect to claims 37 and 43-45 , Uchinda et al. the fuel cell device comprises a control unit for controlling a flow of the hydrogen from the hydrogen storage unit to control an operation of a fuel cell in the fuel cell body (Col 3 lines 4-15).

With respect to claims 38-39, Uchinda et al. the fuel cell device **2** "power generating section" is detachably received in a cell device-receiving portion la of an equipment **1** "heat producing section", such as a personal computer and the like, for which a cell power source is required (Col 5 lines 54-67) (See Fig. 1).

FIG.1



With respect to claim 40, Uchinda et al. teach that the polymer electrolyte fuel cell uses ion exchange membranes, which are a solid polymer electrolyte, as an electrolyte, and a general construction thereof is shown in FIG. 29. In this construction employing the ion exchange membranes **51**, a positive electrode **52** and a negative electrode **53** are formed respectively on both sides of the membrane **51** to provide a layer construction, thus forming a unit cell **54**. When hydrogen is used as fuel, the following reaction occurs in an interface of contact between a catalyst and the polymer

electrolyte at the negative electrode (Col 5 lines 20-35). Uchinda et al. the fuel cell device **2** "power generating section" is detachably received in a cell device-receiving portion la of an equipment **1** "heat producing section", such as a personal computer and the like, for which a cell power source is required (Col 5 lines 54-67) (See Fig. 1).

With respect to claim 41, Uchida et al. as modified by Johnson disclose a miniaturized fuel cell assembly in paragraph 2 above.

With respect to a fuel supply section being arranged in the heat-dissipating section, Uchida et al. teach that since the hydrogen supply pipes **6b** are embedded in the water retention means **8** "heat-dissipating section" as described above, the moisture or water in the water retention means **8** penetrates into the hydrogen supply pipes **6b** through peripheral walls thereof, thereby humidifying the hydrogen gas flowing through the interior of these pipes **6b**. The water retention means 8 is held in contact with the fuel cell body **4**, and therefore absorbs heat produced when the fuel cell body **4** generates electricity, thus contributing to evaporation of the retained moisture. Besides, the water retention means **8** "heat-dissipating section" is extended to be held in contact with the hydrogen storage unit **5**, and therefore transfers the heat, produced when the fuel cell body **4** generates electricity, to the hydrogen storage unit **5** to heat a hydrogen storing alloy, thereby enhancing an efficiency of a hydrogen-discharging reaction (Col 6 lines 1-67) (See FIGS. 6 and 7).

With respect to cooling the heat producing section with a liquid fuel supplied to the fuel-supply section, Uchida et al. teach that the hydrogen storage unit **205** "fuel

supply section" is heated by the air discharged from the fuel cell body **204** "heat producing section" while there can be used a construction, in which heat generated from the equipment "heat-producing section", on which the fuel cell power source is mounted, is transferred to the unit by the use of a high thermally-conductive metal such as copper or aluminum or carbon materials in order to achieve similar effects (Col 8 lines 24-45). "The heat producing section of Uchinda et al. is cooled by the fuel of Uchinda et al. through a thermally conductive material."

Response to Arguments

4. Applicant's arguments filed on June 26th, 2009 have been fully considered but they are not persuasive.

Applicant's principal arguments are

(a). Thus, one skilled in the art would readily understand that the fuel-supply section of the fuel cell according to the present invention is mechanically separated from the power-generating section, taking account of the structure of the electric device which has the heat-producing section and the heat-dissipating section. In contrast, Uchida discloses a miniaturized fuel cell assembly wherein a fuel tank 5 (205) and a fuel cell body 4 (204) are integrated together. Further, the fuel cell body 2 is detachably received in a cell device-receiving portion 1 a of the equipment. See, col. 5, lines 54-55.

In response to Applicant's arguments, please consider the following comments.

(a) Examiner notes that the rejection is based on the embodiment of an assembled fuel cell system of the prior art where the components are mechanically separated from each other.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795